

CHAPTER III

RESEARCH METHOD

A. Research Design

This study employed a pre-experimental design using a one-group pretest-posttest format. In this design, participants took a pretest before the treatment and a posttest after to determine if their reading skills improved through the use of digital comics.

According to Creswell (2012), a pre-experimental design is a type of quantitative research involving an intervention but lacking a control group. The one-group pretest-posttest design is suitable for preliminary research examining the potential effects of an educational intervention. In this study, this design was chosen to enable the researcher to measure differences in students' reading performance before and after using digital comics.

This method is appropriate for small-scale research, especially when the aim is to observe the initial impact of a treatment without comparing it to another group. It helps researchers quantify changes in outcomes (in this case, reading ability) due to a specific intervention while acknowledging the limitation of not having a control group for comparison.

B. Population and Sample

1. Population

This study's population was the eighth-grade students at SMPN 2 Gunung Talang during the 2024/2025 academic year. There were a total of eight eighth-grade classes at this school, labeled as VIII A through VIII H. However, the population included only six classes, from VIII C to VIII H. Classes VIII A and VIII B were excluded from the population based on administrative considerations. These two classes were assigned to programs that were not suitable for this research, such as special assignments, pilot programs, or overloaded academic schedules. These factors could affect the students' availability for treatment and testing sessions. Thus, they were not considered part of the accessible population. Therefore, the total accessible population for this study consisted of students from classes VIII C, VIII D, VIII E, VIII F, VIII G, and VIII H.

2. Sample

This study's sample was selected using purposive sampling. Also known as judgmental sampling, purposive sampling is a non-probability method in which researchers select participants based on specific characteristics relevant to their objectives. This technique enables researchers to focus on a specific group with the necessary qualities for the study, ensuring the collected data is relevant and meaningful.

In this study, class VIII E was chosen as the sample based on several important considerations. First, the students in this class had never been exposed to digital comics in previous English learning activities, making them suitable subjects for examining the effects of digital comics on reading ability. Additionally, most students in Class VIII E had sufficient access to digital devices, such as smartphones or tablets, as well as internet connectivity. This enabled them to access and read the digital comic materials independently at home. The class also demonstrated a relatively balanced level of English proficiency, as evidenced by the students' performance in the previous semester, making them an appropriate representation of average-level learners. Furthermore, the class schedule was compatible with the research timeline, enabling the researcher to efficiently conduct the pre-test, treatment, and post-test sessions. The cooperation of the English teacher also supported the study's smooth implementation.

Considering these factors, Class VIII E was selected as the sample for this research study. Thirty-one students from this class participated in the study. Purposive sampling was used to ensure that the sample met the study's specific operational needs and aligned with the characteristics of the intended target population.

C. Research Instrument

1. Validity of The Instrument

A research instrument is an essential tool that assists in the data collection and analysis process. A valid and reliable instrument produces accurate data that aligns with the research objectives. In this study, the instrument was a reading test designed to measure students' reading ability before and after reading digital comics.

To ensure the test's quality, the researcher carried out a series of validation and reliability procedures. Content validity was used in this study, which refers to the extent to which the test's content aligns with the intended measurement objectives. The reading test items were constructed based on reading skill indicators outlined in the national curriculum and supported by the theories of experts such as Brown (2004) and Grabe and Stoller (2002).

To ensure content validity, the researcher sought input from two expert validators who are lecturers specializing in English language teaching. The lecturers assessed whether the test items aligned with the targeted reading skill indicators and provided feedback on language clarity, contextual relevance, and item difficulty. Based on their evaluations, the researcher revised the instrument to improve the quality and appropriateness of the items for junior high school students.

In addition to expert judgment, the researcher conducted empirical validation by administering a trial of the instrument. This trial was conducted with eighth-grade students at the same school, who were not included in the main research sample. The purpose was to determine the extent to which each test item accurately measured reading ability. The tryout results were analyzed using the Pearson Product Moment correlation formula with SPSS software.

$$r = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

Where:

- r = item validity
- X = item score
- Y = total score
- n = number of students

An item was considered valid if its corrected item-total correlation (r-count) exceeded the critical value in the r-table at the 0.05 significance level. Additionally, items with a significance value (Sig.) lower than 0.05 were deemed statistically valid. Items that did not meet the required criteria were revised or eliminated from the final version of the test.

The complete results of the validity analysis, including the statistical values of each item, are presented in Chapter 4 in the descriptive data section to support the development of the research instrument.

2. Reliability of the Instrument

Reliability refers to an instrument's consistency and stability in measuring the intended variable. In this study, the reading comprehension

test's reliability was assessed to determine if it produced consistent results. The researcher used Cronbach's Alpha formula to evaluate internal consistency, which was calculated with the help of SPSS software. This statistical method is commonly used in educational research to measure the relationship between items in a set.

According to Brown (2004), a reliability coefficient with a Cronbach's alpha value of 0.70 or higher is considered acceptable for classroom-based research :

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum \sigma_{\text{item}}^2}{\sigma_{\text{total}}^2} \right)$$

Where:

- α = reliability coefficient
- k = number of items
- σ_{item}^2 = variance of each item
- σ_{total}^2 = total variance of all items

After analyzing the students' responses from the trial test, the result was a Cronbach's Alpha value of (insert actual value here), indicating that the test had a high level of internal consistency and could be used reliably in this study. This means that the items in the reading comprehension test consistently measured the same underlying construct: students' reading comprehension ability.

A complete reliability analysis, including SPSS output, is included in Chapter 4 of the descriptive data section of this thesis to provide additional evidence regarding the quality and reliability of the instrument.

3. Finalization of the Instrument

After the validation and reliability testing process, the final reading test instrument consisted of 20 items divided into:

1. 10 multiple-choice questions
2. 10 short-answer (constructed response) questions

Both the pre-test and post-test used the same structure, but with different reading texts of similar length, level, and genre to ensure a fair measurement of improvement.

4. Research Instrument Grid

Based on the aforementioned aspects, a question grid was created to ensure that all aspects of reading ability were properly tested. The grid assists in preparing questions that align with the research objectives.

Table 3. 1 Blue print

No	Dimension	Indicator	Question Number
1	Identify main idea	Determine the main idea	1, 2
2	Specific information	Answer questions based on the content of the text	3, 4
3	Specific information	Summarize or summarize the content of the text	5, 6

4	Summarize the content of the text	Summarize or summarize the main content of the text	7, 8
5	Vocabulary in context	Interpret the meaning of words based on the context of the sentence	9, 10
6	Identify main idea	Determine the main idea of the text (essay)	11, 12
7	Specific information	Respond briefly to key information	13, 14
8	Summarize the content of the text	Summarize the value or lesson of the text	15, 16
9	Vocabulary in context	Explain the meaning of a word or phrase in a sentence	17, 18
10	Narrative text structure	Recognize narrative parts (orientation, resolution, etc.)	19, 20

5. Result of Material Expert Validation

The research instrument, which uses multiple-choice questions to measure the effect of digital comics on the reading ability of students at SMP Negeri 2 Gunung Talang, has been validated by two expert lecturers: Mrs. Lailatul Husna, S.Hum., M.Pd., and Mrs. Honesty Trila, S.Pd.I., M.Pd. Each lecturer acts as a material expert validator. This validation process ensures that all prepared items align

with the indicators to be measured and are relevant to the research objectives.

Based on validation results from both validators, the instrument was deemed appropriate for research purposes. It is believed to conform to the aims and objectives of the research and to test components of students' reading skills using digital comic media. The questions are worded clearly enough for students to understand, and the directions are sufficient for helping students answer questions correctly. Furthermore, the instrument's design and content are appropriate for the study's topic and junior high school students.

Table 3. 2 : result of material expert validation

No.	Assessed aspect	Score
1	Suitability of the instrument with the research objectives	3
2	Suitability of content / statements / questions with indicators	3
3	Clarity of language used	4
4	Clarity of instructions for filling out the instrument	3
5	Applicability of the instrument to research subjects	4
Nama Validator :Lailatul Husna, S.Hum., M.Pd Jabatan / Instansi : Dosen/State Islamic University Imam Bonjol Padang Tanda Tangan/Tanggal : 15 mei 2025		

Table 4. 1 Result of material expert validation

No.	Assessed aspect	Score
1	Suitability of the instrument with the research objectives	4
2	Suitability of content / statements / questions with indicators	3
3	Clarity of language used	3
4	Clarity of instructions for filling out the instrument	4
5	Applicability of the instrument to research subjects	3
Nama Validator : Honesty Trila, S.Pd.I., M.Pd Jabatan / Instansi : Dosen/State Islamic University Imam Bonjol Padang Tanda Tangan/Tanggal : 15 mei 2025		

Score Description:

1 = Not suitable

2 = Less suitable

3 = Quite suitable

4 = Very suitable

Based on the two validators' assessments, it can be inferred that the researcher's instrument is fit for use in the study, as it meets the eligibility requirements regarding content, language, and application in the educational setting under investigation.

D. Technique of Data Collection

Data collection for this study was conducted in three stages: pre-test, treatment, and post-test. These stages were carried out over the course of two weeks during regular English class hours in coordination with the selected class's English teacher.

The first stage was the pre-test, which assessed the students' initial reading comprehension ability before using digital comic materials. The pre-test consisted of 20 multiple-choice and short-answer questions based on a narrative text matching the students' proficiency level. The pre-test was administered during one class session and allotted 45 minutes.

The second stage was the treatment phase. During this phase, students were given access to select digital comic materials in English. These materials were chosen based on their readability, narrative structure, and alignment with the students' reading level. The comics were provided through accessible platforms and could be read on personal devices. Students were instructed to read the comics independently outside of class over five days. The English teacher monitored their progress using short reading logs or reflection sheets. No formal reading instruction was given during this period, as the purpose was to observe the potential impact of independent reading using digital comics.

The final stage was the post-test, which was conducted after the treatment period to measure improvement in reading comprehension. Like the pre-test, the post-test contained the same number of questions and

types, but used a different narrative text of comparable difficulty. As with the pre-test, the post-test was carried out in one class session with the same time allocation of 45 minutes.

All tests were administered in a controlled classroom setting with the researcher and class teacher present to supervise. The students' answers from both tests were collected, scored, and analyzed to determine the effect of digital comics on reading comprehension.

E. Techniques of Data Analysis

The data obtained from the pre- and post-tests were analysed using several statistical techniques with the help of SPSS software.

1. Descriptive Statistics

These were used to calculate the mean, standard deviation, minimum, maximum and median for both the pre-test and post-test scores.

- **Mean formula:**

$$\bar{X} = \frac{\sum X}{n}$$

- **Standard deviation formula:**

$$s = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n - 1}}$$

2. Pre-Requisite Data Analysis

Before conducting hypothesis tests, we analyzed the pre-test and post-test data to ensure that they met the assumptions for

parametric statistical analysis, specifically the tests of normality and homogeneity.

The normality test was conducted using the Shapiro-Wilk test with the help of SPSS software. This test determined whether the pre- and post-test scores were normally distributed. The results showed that the p-value for the pre-test was 0.368 and for the post-test was 0.239. Since both values were greater than 0.05, it can be concluded that the data were normally distributed.

Next, a homogeneity test was carried out to examine whether the variance between the pre-test and post-test data was homogeneous. This test employed Levene's test. The result showed a p-value of 0.940. Since this value was greater than 0.05, it can be concluded that the data had homogeneous variance.

Therefore, the data met the assumptions required to proceed with hypothesis testing using parametric statistical analysis techniques.

3. Hypothesis Testing (Paired Sample t-Test)

A paired sample t-test was conducted using SPSS software to determine whether there was a statistically significant difference in students' reading comprehension scores before and after the use of digital comics.

The test compared the mean scores from the pretest and posttest. The results showed that the mean difference between the two sets of scores

was 14.68, with a t-value of -12.41. The two-tailed significance value was 0.000, which is lower than the threshold of 0.05.

This indicates a statistically significant difference in students' reading comprehension scores before and after the intervention. In other words, the null hypothesis (H_0)—which stated that there was no significant difference—is rejected, and the alternative hypothesis (H_1) is accepted.

Based on this finding, it can be concluded that using digital comics positively and significantly improved students' reading comprehension abilities.

Next, a homogeneity test was carried out to examine whether the variance between the pre-test and post-test data was homogeneous. This test employed Levene's test. The result showed a p-value of 0.940. Since this value was greater than 0.05, it can be concluded that the data had homogeneous variance.

Therefore, the data met the assumptions required to proceed with hypothesis testing using parametric statistical analysis techniques.